



**Case Report:**

**Surgery with Timed Wake-Up Anesthesia for Hemangioma of Ring Finger Flexor Digitorum Superficialis**

**Authors**

**Jagannath B Kamath**, Department of Orthopaedics, Kasturba Medical College Mangalore, Manipal University,

**Nikil Jayasheelan**, Department of Orthopaedics, Kasturba Medical College Mangalore, Manipal University,

**Trivikram Shenoy**, Department of Anesthesiology, Kasturba Medical College Mangalore, Manipal University,

**Ankush Bansal**, IVY Super Speciality Hospital, Ludhiana, India,

**Kishan Shetty**, Department of Paediatric Surgery, Father Mullers Medical College, Mangalore,

**Premjit Sujir**, Department of Orthopaedics, Kasturba Medical College Mangalore, Manipal University.

**Corresponding Address**

**Nikil Jayasheelan**,

Department of Orthopaedics,

Kasturba Medical College,

Mangalore, India

**E-mail:** dr\_nikil@yahoo.com

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**Abstract:** We are presenting an unusual case of haemangioma arising from the Flexor Digitorum Superficialis (FDS) of the ring finger, managed surgically by total excision and end to side anastomosis of FDS to middle finger using timed wake-up anaesthesia in hand surgery in order to confirm the correction of deformity adequacy of the repair.

**Key Words:** Haemangioma, Flexion deformity of ring finger, Timed wake up anaesthesia

**Introduction:**

Haemangiomas are the most common soft tissue tumours of infancy. Despite the frequency of these tumours, their pathogenesis is not completely understood.[1] Of all haemangiomas of the body, 0.8% occur in muscles.[2] Intramuscular haemangiomas are non-metastasizing benign hamartomatous congenital neoplasms, that after remaining unrecognized for long periods, may suddenly start to grow in the second and third decades of life.[3] These deserve attention not only because of their rarity but also because of their invariably confusing clinical presentation as well as intriguing etio-pathogenesis.

**Case Report**

The 14-year-old girl presented with painless swelling on her left forearm associated with flexion deformity of ring finger. According to her medical history swelling was insidious on onset and is slowly growing for the past one year. There was history of gradual increase in the flexion deformity of the ring finger (Fig.1A). For the last two weeks swelling was painful. On examination the tender swelling was present on anteromedial aspect of proximal forearm with no local signs of inflammation. Skin over the swelling was pinch able and clinically found to be intramuscular. The swelling was non compressible and trans-illumination negative. There were no clinical signs of involvement of ulnar neurovascular bundle. On looking for the transverse mobility of the swelling in the forearm there was associated passive transmitted movements

of the ring finger. The patient was unable to fully extend the finger and passive range of extension of ring finger was more with the wrist in flexion and ulnar deviation (Fig.1B) suggestive of fixed musculo-tendinous length (Volkman's sign positive). Routine blood and radiological investigations were inconclusive

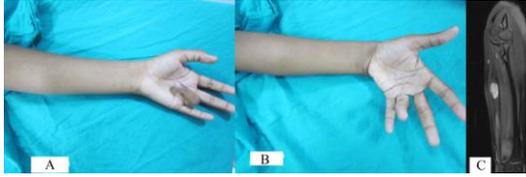
MRI scan was suggestive of focal haemangioma (Fig.1C)

With appropriate counselling the lesion was surgically explored under timed wakeup anaesthesia in hand[4], which allows us to confirm appropriate release with complete and total active movements of the digits intra-operatively.

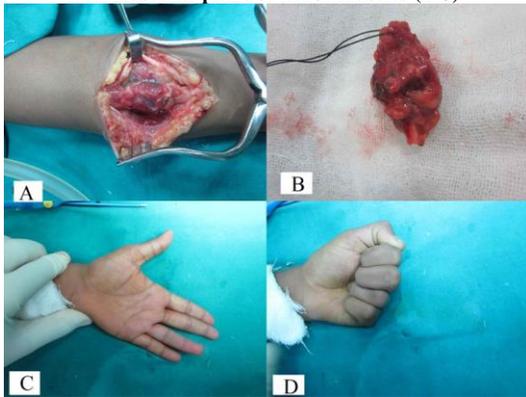
Once the tumour was excised in total and the distal end of Flexor Digitorum Superficialis (FDS) of ring finger was anastomosed with FDS of the middle finger in an end to side fashion, the tourniquet was released and haemostasis was achieved. Propofol drip was stopped temporarily 2- 3 minutes before the surgeon wanted the patient to cooperate fully for intraoperative active movements. Surgery revealed a multiloculated purple-red mass arising from musculo-tendinous junction of FDS of ring finger (Fig.2A). Further, the mass had invaded into the substance of FDS of ring finger with close approximation to neurovascular bundle. The lesion was excised including the portion of FDS (Fig.2 B). The distal portion of FDS of ring finger was attached to FDS of middle finger. Complete deformity correction can be assured only if the patient actively flex and extend on table which is possible only with wide awake surgery. We ensured that the patient was able to fully extend and flex all the fingers at both MP& IP joints intraoperatively (Fig 2 C,D). This not only confirmed the adequacy of the release but also suggested that the end to side repair of the ring finger FDS to the mid finger FDS was strong enough for early active controlled mobilisation of the digits Post excision, the remaining long flexor tendons were found to be uninvolved. The lesion was sent for excision biopsy.

Histopathological examination confirmed the diagnosis as cavernous haemangioma.

Complete correction of deformity was observed with full extension and flexion post operatively.



**Fig 1: Isolated flexion deformity involving ring finger at PIP joint (1A). The deformity partially corrected on flexion and ulnar deviation of the wrist joint (positive Volkman sign) (1 B). MRI picture of focal haemangioma of proximal forearm extending from deep fascia into intermuscular plane of flexor muscles (1 C).**



**Fig 2: Intraoperative picture showing the haemangioma involving the FDS of the ring finger (2 A). Total excision of the swelling including a normal cuff of the FDS tendon of ring finger (2 B). Intraoperative complete correction of deformity with full extension and flexion at PIP and DIP joints (2 C, D).**

### Discussion

The life cycle of a haemangioma differs from that of most tumours in that a haemangioma has a phase of rapid proliferation that is followed by spontaneous involution. Usually arising during childhood, it may continue to extend either continuously or intermittently throughout adult life.

Every report of the intra-muscular haemangioma in literature stresses its atypical clinical presentation. It is usually seen as a slow growing mass that may or may not be painful. Features characteristic of vascular tumours like pulsation, thrill or bruit are generally absent and hence, the condition is rarely diagnosed pre-operatively.[5]

Spontaneous resolution has not been known to occur. Radiotherapy, cryotherapy and embolization have been found to be largely ineffective. Total excision, often requiring en bloc resection of the tumour along with the involved muscle is the universally recommended treatment and was the method employed in the current case.

Various complications have been reported in intramuscular haemangioma, but there is paucity of the literature on intramuscular haemangioma leading to deformity of digits. Case we are describing is unique by the fact that it has involved only one tendon of the digit. Previously reported intramuscular haemangioma involving forearm have involved group or multiple tendons. As reported in literature we did managed to treat our patient with en bloc resection and end to side repair of the involved tendon to the neighbouring uninvolved tendons.

In conclusion, we the authors are presenting this case not only because of rarity of intramuscular haemangioma involving FDS of ring finger with gross deformity but also the way it was

managed under timed wakeup anaesthesia in hand, which not only ensured that the deformity was fully corrected but also helped us to assess the strength of repair intraoperative when subjected to full active range of movements.

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